Fathead minnows are the most popular legal baitfish in North Dakota.

MINNOW MATTERS

Little Fish are Big Issue for North Dakota Anglers

Story and Photos by Craig Bihrle

An angler venturing into most North Dakota baitfish outlets, minnow bucket in hand, doesn't have much for choices. It's usually fathead minnows, fathead minnows, or fathead minnows – perhaps with a small, medium or large option.

While North Dakota allows a few other live baitfish alternatives, they aren't widely available because of limited demand or restricted use. White suckers are only legal in one North Dakota fishing water – the Red River. Spottail shiners and creek chubs are legal in all waters where live baitfish are allowed, but anglers seldom ask for them, and they are difficult to keep alive, so few vendors stock them. Sticklebacks occasionally wind up in a scoop of fatheads, and while they are legal bait, they are seldom used and vendors usually do their best to separate them from fatheads.

Those five fish species complete the list of live baitfish anglers can use in North Dakota waters. That's certainly not all the different small fish that might serve as a meal for a big fish, however. Game and Fish biologists account for nearly 100 fish species in North Dakota and anglers have likely used many of them, even small game fish, as bait at one time or another over the past century.

The current list is short by design. Only in recent years has Game and Fish narrowed the potential offerings as part of an initiative to keep certain types of fish out of certain lakes.

Every North Dakota fish, early in its life, is small. Some, like the popular fathead minnow, stay that way. Others grow, however, which can be a problem if that "minnow" is a fish that isn't already part of the lake.

The pages of this magazine have for years detailed Game and Fish Department efforts to clean up lakes following introduction of unwanted fish species. Some of these problems are directly related to purposeful, illegal stocking of incompatible species. Others can be traced to anglers using live baitfish where it wasn't allowed, or inadvertent release of unwanted species that were mixed in with legal baitfish in a minnow bucket.

For decades, fisheries managers have struggled with these unwanted or undesirable fish in North Dakota waters. Bait regulations are just part of the solution to maintaining clean lakes, and some of the changes developed over the past decade are working as intended. "We don't have it under control by any stretch of the imagination," says Emil Berard, the Game and Fish Department's western district fisheries supervisor, "but I think compared to 1990, we've made some progress."

What's an Undesirable Fish?

Just about any fish can qualify as an undesirable species if it winds up in the wrong body of water. Common carp and white sucker are probably the most familiar undesirable fish in North Dakota, but yellow perch are frequently on the list, though in some lakes they are prized game fish. Black bullheads and green sunfish are never desirable, and at times crappie, bluegill, bass, walleye and northern pike don't fit the mix that fisheries biologists want in a given lake.

Undesirable fish are, first and foremost, species not preferred by anglers. They could be either too small, of questionable eating quality, not readily caught on hook and line, or a combination of all three.

In most fisheries, undesirables take up space that could instead support game fish or needed forage species. An acre of water can only support so many pounds of fish. Biologists try to manage most lakes and rivers to provide maximum opportunity for anglers, given each waters' limitations such as size, depth, structure, geographic location, watershed land use, fish species' composition, etc.

If a lake has a balanced fish population, and an undesirable gets into the mix, the balance is upset. Introduced undesirables mean lost opportunities in the long run.

Bill Andrus, wholesale bait vendor, Dickinson, pulls traps. Getting minnows from pond to bait store to fishing hook is an involved process. Traps are set and pulled in (upper inset). Andrus transfers minnows from trap to a device called a sorter. The sorter (lower inset) is like a sand sifter for minnows. Sorters with varying spaces between the grates allow vendors to sort minnows by size.

About 15 years ago, in the middle of a significant drought that reduced the number of manageable lakes in North Dakota to around 170, the Department's fisheries division evaluated the challenges that stood in the way of better fishing in the state. Water quality was identified as the number one problem; undesirable species was a close second.

"When we looked at the number of lakes that could provide angling," Berard recalled, "over 50 percent of them were having problems with undesirable species."

The actual number was about 100 lakes with problems out of 170 potential fishing waters. And it wasn't just one or two kinds of fish. Biologists identified 20 different species as causing problems in one or more lakes. The top three were white sucker, black bullhead and yellow perch.

In more than 40 of those 100 problem lakes, Berard said, between 50 and 100 percent of the fish were undesirable species.

The action plan included cleaning up some of those lakes, primarily by chemically treating the water to kill all fish life, and starting over with managed stocking. But without a parallel effort to address the sources of undesirable fish introductions, many lakes would continue to develop problems over time. "When we looked at why those lakes were full of garbage," Berard said, "one of the sources was bait."

Bait was not the only, nor likely the most notorious source. Purposeful illegal stocking by anglers was and still is the primary reason undesirable species get in lakes. Nature, too, contributes when lakes overflow with runoff and fish species transfer from lake basin to lake basin.

Bait, however, was something the Game and Fish Department could address without a lot of cost or inconvenience.

Where to Start?

North Dakota has had bait regulations for decades, but they dealt more with where people could use live baitfish, rather than what people could use. On many lakes, anglers were not allowed to use live baitfish. On a few lakes this regulation was designed to restrict fish harvest, but the primary intent was to reduce potential for transfer of unwanted fish via bait bucket.

On lakes in which live baitfish were allowed, however, just about anything an angler wanted to put on a hook, except for small game fish, was legal. And if it was legal to use, it was likely legal to sell. If people could buy it, there was temptation to use it, even on lakes where no live bait fish were allowed.

Most species sold as "minnows" or "chubs," Berard noted, probably wouldn't be harmful if they were dumped in a lake or escaped alive from a hook, but the problem was, and still is that a lot of anglers don't know the difference. Even vendors who sold the bait didn't always know what they had. "If the vendor was trapping his own bait," Berard said, "most everything went into the bait tank ... there were too many species to identify."

Dickinson bait vendor Bill Andrus has been in the business since the early 1950s when he started helping a neighbor sell minnows. Andrus owned the business by the time he was a seventh-grader. He caught creek chubs and other small fish out of the Heart River and Antelope Creek near Dickinson and sold them in town. "A nickel a fish, that was good money," Andrus fondly remembered, though admitting that "we had no clue what we were selling."

The first step in addressing that situation, Berard said, was to reduce the number of species that could be sold for bait. "White sucker," he related, "was our first target because they were our worst problem in the bait industry."

What's Wrong with Suckers?

At one time suckers were widely used in North Dakota. In fact, in the 1960s and early 1970s the Department even promoted thier use. Problem is, suckers that are minnow-sized in their first or second year don't stop growing. White suckers can grow to 24 inches and 5 pounds and in a contained environment they can take over a fishery. While they are native to the Missouri and Red river systems, they are especially troublesome in small lakes that lack natural predators.

Since white suckers are native to the state's two largest river systems, the Department's first cut at restricting their use left things as they were on the Missouri and Red. In a practical sense, a few more suckers released in these large rivers wouldn't make a difference. The problem, however, was the potential for anglers to take suckers and use them someplace besides the Missouri System, even though it wasn't legal.

Sticklebacks are legal bait in North Dakota, but if one winds up in a retail minnow tank it's usually by mistake. Vendors typically try to remove them from loads of fatheads. Most vendors try to trap in "clean" ponds to avoid having to spend time sorting out sticklebacks, or other minnows that might not be legal.

"Some of the guys then, and probably today," Berard said, "still believe they could not catch their fish without the use of suckers."

Part of the education process was to provide alternatives, and it didn't take long for word to spread that big northern pike and walleye could both be caught, just as well as on other baits. Dead baits like smelt and herring easily replaced live suckers as an effective bait for large pike in winter and early spring, and trolling for suspended walleyes in summer became common practice.

A couple of years later Game and Fish outlawed use of suckers on the Missouri System, and made fatheads the only live baitfish legal for use in the state. The Red River was left alone because of its shared responsibility with Minnesota, which allows suckers as bait on the Red.

At present, less than a half-dozen bait vendors in the state have special permits to sell suckers.

While some individual anglers and a small group of wholesale bait vendors resisted the move away from suckers, wildlife and fishing clubs, as well as most retail bait vendors, gave Game and Fish widespread support in its efforts to improve the bait situation. "By and large," Berard recalled, "the bait industry and anglers, I think from the onset, recognized that they weren't going to have good fishing, and good fishing long term, if they didn't keep it clean ... we needed to deal with the issue and we had the angling public's support."

While some vendors might have lost some business opportunities, most realized that reduced fishing opportunities caused by undesirable fish also reduced potential bait sales. Many were not at all disappointed when they could no longer sell suckers, Berard said, because suckers were harder to keep alive than fatheads, and yielded little profit because of low demand.

Andrus, a former junior high school science teacher, bought and developed a resort on the Little Missouri Arm of Lake Sakakawea in the late 1970s. At that time, he said, suckers accounted for about 95 percent of his retail bait sales. He owned the resort until 1983, and then again from 1991-99. By the early 1990s, sucker use had dwindled to perhaps 5 percent of sales, with fatheads the overwhelming bait of choice. Part of the transition, he said, was a shift in interest from pike to walleye, and from shorefishing to fishing from a boat. As such, he said, when suckers were no longer legal it wasn't a big deal.

On the other hand, in only a few years fisheries managers are starting to see desired results. Greg Power, the Game and Fish Department's fisheries research and management supervisor, thinks reintroduction of suckers into clean lakes is way down. "It's still a working deal," he said, "but this whole initiative over the last 15 years has been a success. It's interesting to note that creel surveys on varying lakes, since the regulation making whtie suckers illegal, has shown that anglers routinely use fathead minnows with great success."

The Other Sources

Reducing the number of fish species that could be sold or used for bait in North Dakota was an important first step, but it was only part of the process. One of the critical components, Berard said, was dealing with imported bait, both by individual anglers and by commercial vendors.

For the last few years, individual anglers have not been allowed to bring any live baitfish, even fatheads, into North Dakota, because of their potential to carry hidden undesirable species. These days, that threat applies to more than just unwanted fish. Bait buckets from out of state could easily carry aquatic nuisance species such as Eurasian

water milfoil fragments, zebra mussel larvae, spiny water fleas or several other threats that could invade the state's clean lakes.

In fact, Berard says, it is illegal for individual anglers to bring into North Dakota any kind of live bait, including leeches and nightcrawlers.

Commercial vendors, both resident and nonresident, can import bait, but that industry has become much more effectively regulated than even 20 years ago. "We're trying to make sure that whether the wholesaler is a resident or nonresident … wherever those baits are coming from, that they're clean," Berard stated. "We tried to cut the list of bait species down to those that would not have a negative impact if they were released into a system. And now, we want to make sure that's what's being sold."

To do that, both wholesale and retail vendors are subject to inspections, and wholesalers have to notify the Game and Fish Department before they come into the state with live baitfish, and submit a report before they are allowed to import their next load. Twenty years ago there was no reporting requirements or threat of inspection.

Citations for possession of illegal baitfish are not common, according to district game warden supervisor Dick Knapp, Jamestown. "We don't have much trouble with the vendors," he said, adding that a wholesaler who sells bad bait to vendors could be cited for providing illegal bait in a vendor tank.

The Looming Threat

Bait vendors, fisheries biologists and game wardens all agree that progress toward cleaning up the bait industry is notable, but one gaping loophole still exists. North Dakota law allows licensed individual anglers to trap their own bait.

If everyone who traps a few minnows in their local creek or river was 100 percent effective in separating legal baitfish and releasing those that are not legal, it wouldn't present a problem. But some, if not most anglers would have trouble differentiating a few baitfish.

For example, on a recent outing to trap some baitfish for photos for this story, Bill Andrus caught a variety of species in the same type of trap individual anglers can use. In Antelope Creek and the Heart River, the list of fish included creek chub (legal), bullhead (illegal), green sunfish (illegal), fathead male and female (legal), long-nosed dace (illegal), white

North Dakota's Bait Industry

In addition to refined bait regulations developed over the last 10 years, Game and Fish has asked wholesale and retail bait vendors for more thorough reporting on aspects such as total bait sales, types of bait sold, imports and exports. The most recent summary of reports provides an interesting look into the bait industry.

- In 2002, North Dakota had 250 licensed retail bait vendors. Not all vendors sold bait, however, but a retail license is required of anyone who wants to possess more than 12 dozen minnows, or use a seine to catch bait.
- Five resident bait vendors were licensed to sell white suckers in 2002.
- Fathead minnows accounted for 94 percent of live baitfish purchased or sold in North Dakota in 2002. White suckers had 5.6 percent of the market, creek chubs 0.3 percent, and spottail shiners 0.1 percent. That's nearly 60,000 gallons of fatheads, or nearly 3.9 million dozens.
- The volume of live baitfish moved in North Dakota fell considerably from 2001 5.5 million dozens) to 2002 (3.9 million dozen).
- In 2002, nonresident wholesale vendors imported twice as many fathead minnows as did resident wholesalers. Nonresident wholesalers also exported more than twice as many North Dakota minnows than did residents.
- Estimated retail value of fathead minnows sold in-state in 2002 was about $4.3 million. About $2.5 million of that was from fatheads trapped in North Dakota. The rest came from out-of-state. Nightcrawler and leech sales were both close to $1 million.

Photo omitted.

The Minnows of Antelope Creek

Two minnow traps deployed in early May in Antelope Creek south of Dickinson, provide a valuable lesson in fish diversity in North Dakota waters.

All across the state, creeks that hook up with larger rivers are home to dozens of minnow-sized fish species, and of course, small versions of larger species as well. It's those small fish that grow into large fish that worry fisheries managers the most.

The photos at right depict several different species caught in a small section of Antelope Creek. Many of them are similar in appearance and could be easily overlooked by anyone trying to separate the good from the bad. It's easy to see how individuals who trap their own minnows could transfer illegal bait species to a clean lake.

sucker (mostly illegal), golden shiner (illegal) and sand shiner (illegal). Of these, bullheads, white sucker, green sunfish and golden shiner have the potential to destroy an established fishery.

As a resort owner and also a sporting goods store owner, Andrus saw his share of bait buckets, and illegal baits in those buckets. "They'd ask me what kind of fish they were," Andrus said of people who came to the resort, adding that perhaps half the people couldn't identify the baitfish they had. While Andrus could point out the illegal fish and help dispose of them, he also saw lots of folks dump their buckets before weeding out any potentially bad fish.

The shiners, dace and chubs would not likely present a problem if they were inadvertently introduced to a new lake, but a couple of three-inch-long white sucker yearlings would be easy to miss amid a bunch of shiners and fatheads, and the same would hold true for young carp. The cost of a mistake – an unwanted fish mixed in with legal bait, and then dumped out into new water – is just too high.

A prime example is Camels Hump Dam, a scenic little reservoir along Interstate 94 in western North Dakota's Golden Valley County. Camels Hump is burdened with carp and green sunfish, and Berard is convinced those carp started out as transfers from a bait bucket, and likely a bucket filled with "minnows" trapped by an individual, not sold by a retail bait vendor.

"Nobody would intentionally stock carp," Berard said. "All it takes is two of them in a lake like Camels Hump and you destroy a very valuable fishery."

That's exactly what happened. Once a premier trout, bass and panfish fishery, Camels Hump is scheduled for eradication, or chemical treatment, late this summer, at a cost of thousands of dollars, and thousands of hours of lost fishing time. The lake can be restocked and a productive fishery will likely redevelop in a few years, but that doesn't make up for several years of lost time. In a state with only about 300 lakes under management, even one infected by an undesirable species is too many.

After cleaning up nearly 30 lakes via eradication in the 1990s, progress in keeping those lakes clean longer is evident. But the effort is really just getting started.

"We need to remain vigilant," Berard stressed. "Not only Game and Fish, but the bait vendors, the anglers, everybody who uses that resource. We're getting there, slow but sure, but we've got lots of things that need to be cleaned up yet."

CRAIG BIHRLE is the Game and Fish Department's communications supervisor.

Creek chub, legal bait.

Golden shiner, illegal bait.

White sucker, illegal except in Red River.

Sand shiner, illegal bait

Male (above) and female fatheads. The male's head and body turn dark during spawning period. Like salmon, the males also die after they spawn.

Sand shiner (above) and female fathead. These two species are similar in appearance, one is a legal bait, the other is not.

Long-nosed dace, illegal bait.

Green sunfish, illegal bait